AMENDMENTS TO THE CLAIMS

1.(currently amended): A network system [[,]] comprising a high-der node network

performing label switching, which includes including a plurality of high- er nodes and a

plurality of low-order nodes, each of the low-order nodes is connected to e of the plurality of

high-order nodes, in which data transferred from each of the low-order n s is transferred and

transfers data to another low-order node through the high-order node net k, wherein the

network system comprising:

the high-order node network comprises a first and second h-order node nodes,

each of which is provided on the high-order network as one of the plurali of high-order nodes;

and a second high order node;

a first low-order node is provided on the high-order netwo as one of the

plurality of low-order nodes, wherein the first low-order node is connecte the first and second

high-order nodes via at least one physical line comprise a first low-order le as a low order

node of the first high order node,

wherein the first low-order node comprises comprising:

a first output port to transmit data to the first high-order n via said at least one

physical line;

a second output port to transmit data to the second high-or node via said at

least one physical line;

a selecting section to select one of the first and second out ports in order that

the first low-order node transmits data to one of the first and second high er nodes;

a detection section detecting, in the case of the first output rt is selected by the

selecting section, a communication failure between the first low-order no and the first high-

order node;

a host change request section making a request to requesti he second

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high-order node that the second high-order node serves as a high-order n(([[of]] for the first low-order node in place of the first high-order node when the detection s(c on detects the communication failure; and

a low-order node setting section performing at least one of - recess processes for causing the first low-order node to transmit data to the second high-order r de in place of the first high-order node on the basis of [[the]] process information transmitt ;, from the second high-order node, wherein the selecting section selects the second output j (. as one of the processes, and

wherein the second high-order node comprises comprising:

a high-order node setting section performing at least one of rocess for causing the second high-order node to transmit data received from the first low-oi (r node to another low-order node corresponding to a destination of the data according to th : :quest of the host change request section; and

a process information transmission section transmitting th : rocess information corresponding to the process performed by the high-order node setting se :)n to the first low-order node.

2.(currently amended): A network system [[,]] comprising a high (der node network performing label switching, which includes including a plurality of high- ; er nodes and a plurality of low-order nodes, each of the low-order nodes is connected to (e of the plurality of high-order nodes, in which data transferred from each of the low-order n ;)s is transmitted and transfers data to another low-order node through the high-order node net / 'k, wherein the network system comprising:

the high-order node network comprises a first and second ; h-order node nodes, each of which is provided on the high-order network as one of the plurali :)f high-order nodes; and a second high-order node,

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a first low-order node is provided on the high-order netw[ork] as one of the plurality of low-order nodes, ~~comprises a first low-order node serving as~~ [l]ow order node of the ~~first high~~ order node wherein the first low-order node is connected to the [fi]rst and second high-order nodes via at least one physical line and includes a first output port [to t]ransmit data to the first high-order node via said at least one physical line, a second output p[ort] to transmit data to the second high-order node via said at least one physical line, and a selec[ting] section to select one of the first and second output ports in order that the first low-order n[ode] transmits data to one of the first and second high-order nodes,

wherein the first high-order node ~~comprises~~ comprising:

a detection section detecting, in the case of when the first [out]put port is selected by the selecting section, a communication failure between the first high-c[rde]r node and the first low-order node; and

a host change request section making a request to ~~requesti~~ [to] the second high-order node that the second high-order node serves as a high-order n[ode] [[of]] for the first low-order node in place of the first high-order node when the detection s[ecti]on detects the communication failure,

wherein the second high-order node ~~comprises~~ comprising:

a high-order node setting section performing at least one [pro]cess for causing the second high-order node to transmit data received from the first low-o[rder] node to another low-order node corresponding to a destination of the data according to th[e re]quest of the host change request section; and

a process information transmission section transmitting pr[oce]ss information corresponding to the process performed by the high-order node setting se[ctio]n to the first low-order node, ~~and~~

wherein the first low-order node ~~comprises~~ comprising:

a low-order node setting section performing at least one o[f pr]ocess for causing the

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first low-order node to transmit data to the second high-order node in pla : of the first high-order

node on the basis of the process information transmitted from the proces: formation

transmission section, wherein the selecting section selects the second out) port based on the

process information.

3.(currently amended): A network system [[,]]comprising a high der node network

performing label switching, which includes including a plurality of high-) er nodes[[,]] and a

plurality of low-order nodes, each of the low-order nodes is connected to (e of the plurality of

high-order nodes[[,]] and a high-order computer for monitoring at least-(r of the plurality of

high-order nodes in which each of the low-order notes transfers data to a (er low-order node

through the high-order node network, wherein the network system compi i ig:

the high order node network comprises a first and second) h-order node nodes,

and a second high-order node each of which is provided on the high-orde : etwork as one of the

plurality of high-order nodes;

the plurality of a first low-order node nodes is provided oi _ e high-order network

as one of the plurality of comprises a first low-order node nodes, servin : a low-order node of

the first high-order node wherein the first low-order node is connected to t e first and second

high-order nodes via at least one physical line, and includes a first output] rt to transmit data to

the first high-order node via said at least one physical line, a second outp i ort to transmit data

to the second high-order node via said at least one physical line, and a se e ing section to select

one of the first and second output ports in order that the first low-order n : transmits data to

one of the first and second high-order nodes; and

a high-order computer for monitoring at least the first higl : rder node,

wherein the high-order computer comprises comprising:

a detection section detecting, in the case of when the first) put port is selected

by the selecting section, a failure of the first high-order node; and

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a host change request section making a request to requesti t; the second

high-order node that the second high-order node serves as a high-order n(([[of]] for the first

low-order node in place of the first high-order node when the detection s(c on detects the failure

of the first high-order node,

wherein the second high-order node comprises comprising:

a high-order node setting section performing a process of (; sing the second

high-order node to transmit data received from the first low-order node tc iother low-order

node corresponding to a destination of the data according to the request o f ie host change

request section; and

a process information transmission section transmitting pr) :ss information

corresponding to the process performed by the high-order node setting se ;)n to the first

low-order node, and

wherein the first low-order node comprises comprising:

a low-order node setting section for performing at least on : f process for causing

the first low-order node to transmit data to the second high-order node in ˌ ice of the first high-

order node on the basis of the process information transmitted by the pro ˌ s information

transmission section, wherein the selecting section selects the second out) port based on the

process information.

4.(original): A network system according to the claim 1, where ı

each of the high-order nodes holds path information corre ˌ nding to a

transmission route of data in the high-order node network,

each of the low-order nodes receives the path information ĺ m a high-order node

corresponding to the low-order node itself and, when data is transferred t) ie high-order node,

adds path information corresponding to a destination of the data to the dᴉ t:

each of the high-order nodes transmits the data transferr ˌ from a low-order

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node to another low-order node according to the path information added c he data, the first low-order node further comprises:

a memory section storing path information added to data v. n the data is transmitted to the high-order nodes; and

an updating section for receiving updated path information. ansmitted from the second high-order node to update the memory section on the basis of the i lated path information,

the high-order node setting section of the second high-ord n 10de generates updated path information as new path information corresponding to a trai e er route using the second high-order node as a source node in the high-order node network i ording to a request of the host change request section, and

the process information transfer section of the second high-orde r ode transmits the updated path information formed by the high-order node setting section t i ie first low-order node.

5.(original): A network system according to the claim 2, where i

each of the high-order nodes holds path information corre i nding to a transfer route of data in the high-order node network,

each of the low-order nodes receives the path information f m a high-order node corresponding to the low-order node itself and, when data is transmitted i c he high-order node, adds path information corresponding to a destination of the data to the da :

each of the high-order nodes transmits the data transmit e from a low-order node to another low-order node according to the path information added c he data,

the high-order node setting section of the second high-o: c r node generates updated path information as new path information corresponding to a trai e er route using the second high-order node as a source node in the high-order node network i ording to a request

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of the host change request section,

the process information transmission section of the second gh-order node transmits the updated path information generated by the high-order node ing section to the first low-order node,

the first low-order node further comprises a memory secti storing path information added to data when the data is transmitted to the high-order i es, and

the low-order node setting section of the first low-order n receives the updated path information transmitted from the second high-order node to update i storage section on the basis of the updated path information.

6.(original): A network system according to the claim 2, where r

each of the high-order nodes holds path information corre nding to a transfer route of data in the high-order node network,

each of the low-order nodes receives the path information f m a high-order node corresponding to the low-order node itself and, when data is transmitted he high-order node, adds path information corresponding to a destination of the data to the da

each of the high-order nodes transmits the data transmitte om a low-order node to another low-order node according to the path information added to the ta,

the detection section of the first high-order node detects a f lure of the first high-order node itself,

the host change request section of the first high-order nod quests the second high-order node that the second high-order node serves as the high-order r de of the first low-order node in place of the first high-order node when the failure of t irst high-order node itself is detected by the detection section,

the high-order node setting section of the second high-ord node generates updated path information serving as new path information corresponding a transfer route

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which uses the second high-order node as a source node in the high-order 1 de network and does

not comprise the first high-order node according to a request of the host c 1 ige request section,

the process information transmission section of the second 1 gh-order node

transmits the updated path information generated by the high-order node (ing section to the

first low-order node,

the first low-order node further comprises a memory secti(1 :or storing path

information added to data when the data is transmitted to the high-order r c es, and

the low-order node setting section of the first low-order nc t receives the updated

path information transmitted from the second high-order node to update t 1 storage section on

the basis of the updated path information.

7.(original): A network system according to the claim 3, where: c

each of the high-order nodes generates path information c(1 :sponding to a

transfer route of data in the high-order node network,

each of the low-order nodes receives the path information f ·m a high-order node

corresponding to the low-order node itself and, when data is transmitted 1 he high-order node,

adds path information corresponding to a destination of the data to the da :

each of the high-order nodes transmits data transmitted fr(r a low-order node to

another low-order node according to the path information added to the da :

the high-order node setting section of the second high-ord : 1ode generates

updated path information serving as new path information corresponding t a transfer route

which uses the second high-order node as a source node in the high-ordei 1 1de network and does

not comprise the first high-order node according to a request of the host (1 nge request section,

the process information transmission section of the secon(gh-order node

transmits the updated path information generated by the high-order node ; ting section to the

first low-order node,

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the first low-order node further comprises a memory secti for storing path

information added to data when the data is transmitted to the high-order les, and

the low-order node setting section of the first low-order n receives the updated

path information transmitted from the second high-order node to update storage section on

the basis of the updated path information.

8.(currently amended): A service recovering method in a networl stem[[,]] comprising

a high-order node network constituted by a plurality of high-order nodes l a plurality of

low-order nodes, each of the low-order nodes is connected to one of the ality of high-order

nodes, in-which each of the high-order nodes holds having path informat corresponding to

[[a]] transfer route routes of data in the high-order node network, each of low-order nodes

receives receiving the path information from a high-order node correspor 1g to the low-order

node itself and, when data is transmitted transmitting data to the high-or node, adds adding

the path information corresponding to a destination of the data to the dat , ach of the high-order

nodes transmits transmitting the data transmitted received from a low-or l node toward another

low-order node according to path information added to the data, the plur l of high-order node

nodes network-comprises including a first and second high-order node n s, and a second high

order node, and the plurality of low-order nodes comprise including a fii s low-order node,

serving as a low-order node of the first high-order node, wherein the met l comprising:

the first low-order node detecting a communication failur tween the first high-

order node and the first low-order node, wherein the first low-order node i connected to the first

and second high-order nodes via at least one physical line, and includes st output port to

transmit data to the first high-order node via said at least one physical lin second output port

to transmit data to the second high-order node via said at least one physic line, and a selecting

section to select one of the first and second output ports in order that the t low-order node

transmits data to one of the first and second high-order nodes, and the fir l ow-order node

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detects the communication failure when the first output port is selected b·: ιe selecting section;

the first low-order node ~~requests~~ requesting to the second ˌι h-order node that the

second high-order node serves as ~~the~~ a high-order node [[of]] for the first l ʍ-order node in

place of the first high-order node when ~~a~~ the communication failure betʋ ɩ n the first low-order

node and the first high-order node is detected[[,]] ˌ

the second high-order node ~~recognizes~~ recognizing the firˌt ɔw-order node as the

low-order node of the second high-order node itself according to the requ ɔ ~~of~~ from the first

low-order node and ~~transmits~~ transmitting to the first low-order node, pr ɪɪ ˌss information

including updated path information serving as new path information corɪ ɪ onding to a transfer

route ~~using~~ passing through the second high-order node ~~as a source node~~ ɪ ~~he high-order node~~

~~network to the first low-order node,~~ ˌ and

the first low-order node ~~receives~~ receiving the process infɪ ɪ ɪation with updated

path information transmitted from the second high-order node and ~~updates~~ s pdating the contents

of a memory section, ~~for~~ which has ~~storing~~ stored path information to be ɪ led to data when the

data is transmitted to the second high-order node, on the basis of the updɪ ɪ ɪ path information,

wherein the selecting section selects the second output port based on the·ɪ cess information.

9.(currently amended): A service recovering method in a networl ˌstem [[,]]

comprising a high-order node network constituted by a plurality of high-ɪ ɪ ɪr nodes and a

plurality of low-order nodes, each of the low-order nodes is connected to ɪ ɪ of the plurality of

high-order nodes, ~~in which~~ each of the high-order nodes ~~holds~~ having paɪ ɔ nformation

corresponding to transfer ~~route~~ routes of data in the high-order node netʍ ɪ ɪˌ each of the

low-order nodes ~~receives~~ receiving the path information from a high-ordɪ ɪ .ode corresponding to

the low-order node itself and, when ~~data is transmitted~~ transmitting data ɪ ɪ he high-order node,

~~adds~~ adding path information corresponding to a destination of the data tɪ ɪ ɪe data, each of the

high-order nodes ~~transmits~~ transmitting ~~the~~ data ~~transmitted~~ received froɔ ɪ low-order node to

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another low-order node according to ~~the~~ path information added to the da[ta] the plurality of high-order ~~node~~ nodes ~~network comprises~~ including a first and second h[igh] -order ~~node~~ nodes, ~~and a second high-order node,~~ and the plurality of low-order nodes ~~compi~~ including a first low-order node, ~~serving as a low-order node of the first high-order node~~ wherein the method comprising:

the first high-order node detecting a communication failur[e b]etween the first low-order node and the first high-order node, wherein the first low-order nod[e is] connected to the first and second high-order nodes via at least one physical line, and inclu[de] a first output port to transmit data to the first high-order node via said at least one physical lin[e, a] second output port to transmit data to the second high-order node via said at least one physic[al] line, and a selecting section to select one of the first and second output ports in order that the [firs]t low-order node transmits data to one of the first and second high-order nodes, and the fir[st] [h]igh-order node detects the communication failure when the first output port is selected b[y] [th]e selecting section;

the first high-order node ~~requests~~ requesting to the second [hi]gh-order node that the second high-order node serves as ~~the~~ a high-order node [[of]] for the [firs]t low-order node in place of the first high-order node when [[a]] the communication failure b[etw]een the first low-order node and the first high-order node is detected[[.]];

the second high-order node ~~recognizes~~ recognizing the fir[st l]ow-order node as the low-order node of the second high-order node itself according to the requ[est] ~~of~~ from the first high-order node, and ~~transmits~~ transmitting to the first low-order node, p[roc]ess information including updated path information serving as new path information corr[esp]onding to a transfer route ~~using~~ passing through the second high-order node ~~as a source in the~~ [hi]gh-order node ~~network to the first low-order node,~~; and

the first low-order node ~~receives~~ receiving the process inf[orm]ation with the updated path information transmitted from the second high-order node an[d] ~~updates~~ updating the contents of a memory section, ~~for~~ which has ~~storing~~ stored path informat[ion] to be added to data

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when the data is transmitted to the second high-order nodes node, on the) .is of the updated path information, wherein the selecting section selects the second output) t based on the process information.

10.(currently amended): A service recovering method in a network system[[,]] comprising a high-order node network constituted by a plurality of high-order nodes and a plurality of low-order nodes, each of the low-order nodes is connected to) 2 of the plurality of high-order nodes, in which each of the high-order nodes holds having pat) nformation corresponding to transfer route routes of data in the high-order node netw) :, each of the low-order nodes receives receiving the path information from a high-order ode corresponding to the low-order node itself and, when data is transmitted transmitting data ⌐ :he high-order node, adds adding path information corresponding to a destination of the data t(ιe data, each of the high-order nodes transmits transmitting the data transmitted received fro1 low-order node to another low-order node according to the path information added to the da :: the plurality of high-order node nodes network comprises including a first and second hi ᵨ -order node nodes, and a second high-order node, and the plurality of low-order nodes compi ⌐ · including a first low-order node, serving as a low-order node of the first high-order node √ ⌐ rein the method comprising:

the first high-order node detecting a failure of the first high ᵨ rder node itself, wherein the first low-order node is connected to the first and second high (der nodes via at least one physical line, and includes a first output port to transmit data to the fi :: high-order node via said at least one physical line, a second output port to transmit data to the ς :ond high-order node via said at least one physical line, and a selecting section to select one of] first and second output ports in order that the first low-order node transmits data to one of) ᵨ first and second high-order nodes, and the first high-order node detects the failure of the f ⌐ high-order node itself when the first output port is selected by the selecting section;

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the first high-order node ~~requests~~ requesting to the second l· ;h-order node that
the second high-order node serves as the high-order node [[of]] for the fi ; :ow-order node in
place of the first high-order node when a failure of the first high-order no 1 itself is detected[[,]];

the second high-order node ~~recognizes~~ recognizing the fir: t ıw-order node as the
low-order node of the second high-order node according to the request of t ɜ first high-order
node, and ~~transmits~~ transmitting to the first low-order node, process infoı n ıtion including
updated path information serving as new path information corresponding t a transfer route ~~using~~
passing through the second high-order node ~~as-a-source-node-in-the-high-~~ ʜ ~~er node-network-and~~
~~does-not-comprise-the-first-high-order-node-to-the-first-low-order-node~~, : ; ı

the first low-order node ~~receives~~ receiving the process infi ɔ ıation with the
updated path information transmitted from the second high-order node aı (~~ıpdates~~ updating ~~the~~
contents of a memory section, ~~for~~ which has ~~storing~~ stored path informat c to be added to data
when the data is transmitted to the second high-order ~~nodes~~ node, on the ɔ ;is of the updated
path information, wherein the selecting section selects the second output ɔ ɪt based on the
process information.

11.(currently amended): A service recovering method in a netwoı ɔystem[[,]]
comprising a high-order node network constituted by a plurality of high-ı ı er nodes and a
plurality of low-order nodes, each of the low-order nodes is connected to (ε of the plurality of
high-order nodes, and a high-order computer for managing the high-orde · ɔde network, ~~in~~
~~which~~ each of the high-order nodes ~~generates~~ generating path informatio: ı ɔrresponding to a
transfer ~~route~~ routes of data in the high-order node network, each of the 1 ɔ -order nodes ~~receives~~
receiving the path information from a high-order node corresponding to ı ɔ low-order node itself
and, when transmitting data ~~is transmitted~~ to the high-order node, ~~adds~~ ạ. l· ng path information
corresponding to a destination of the data to the data, each of the high-orı l nodes ~~transmits~~
transmitting data ~~transmitted~~ received from a low-order node to another . ɛ '-order node

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according to ~~the~~ path information added to the data, the plurality of high-) .er ~~node~~ nodes

~~network comprises~~ including the first and second high-order ~~node~~ nodes, a i the second high

~~order node, and~~ the plurality of low-order nodes ~~comprise~~ including a firs t)w-order node,

~~serving as a low-order node of the first high-order node, wherein~~ the meth (comprising:

the high-order computer detecting a failure of the first high r rder node, wherein

the first low-order node is connected to the first and second high-order no (s via at least one

physical line, and includes a first output port to transmit data to the first hi i-order node via said

at least one physical line, a second output port to transmit data to the seco r high-order node via

said at least one physical line, and a selecting section to select one of the] it and second output

ports in order that the first low-order node transmits data to one of the fir i nd second high-

order nodes, and the high-order computer detects the failure of the first hi g -order node when the

first output port is selected by the selecting section;

the high-order computer ~~requests~~ requesting to the second h ;h-order node that

the second high-order node serves as ~~the~~ a high-order node [[of]] for the : t low-order node in

place of the first high-order node when the failure of the first high-order i (e ~~itself~~ is

detected[[,]] :

the second high-order node ~~recognizes~~ recognizing the firs t)w-order node as ~~the~~

a low-order node of the second high-order node itself according to the rec t st of the high-order

computer, and ~~transmits~~ transmitting to the first low-order node, process i)rmation including

updated path information serving as new path information corresponding t a transfer route ~~using~~

passing throug the second high-order node ~~as a source node in the high-oi d :node network and~~

~~does not comprise the first high-order node to the first low-order node, ;~~ a i

the first low-order node ~~receives~~ receiving the process inf(i ation with the

updated path information transmitted from the second high-order node ar j pdates updating the

contents of a memory section, ~~for~~ which has ~~storing~~ stored path informati) to be added to data

when the data is transmitted to the second high-order ~~nodes~~ node, on the i is of the updated

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path information, wherein the selecting section selects the second output) t based on the process information.

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